length L from diaphragm to the ferrule-to-housing joint location and the result for a stainless steel housing and Inconel ferrule. By knowing the coefficients of thermal expansion, the length L can be calculated for other housing, diaphragm and ferrule combinations of materials in a dynamic sensor.

Lines 28-38 on page 4 and lines 1-2 on page 5 of applicants' specification disclose the calculations for static sensors.

Since there are a variety of types of materials for the various components of the diaphragm type sensor, claim 1 has not been restricted to any particular metals, alloys, glasses or ceramics, but rather remains limited to selecting the component materials to compensate for temperature induced changes in sensitivity and offset dependence.

As noted on lines 23-24 on page 1 of applicants' specification, the present invention comprises further improvements to the inventions disclosed in the Wlodarczyk Patent No. 5,600,070 cited by the examiner. The examiner has cited various passages in Wlodarczyk to the construction of the sensor and to selection of material, bonding material, pin material for modulation level and decrease in fiber temperature at the tip; however, Wlodarczyk makes no disclosure of carefully selecting the combination of materials to construct the sensor based on relative coefficients of thermal expansion. Moreover, Wlodarczyk makes no disclosure or suggestion of using the coefficients of thermal expansion of the materials to compensate for temperature induced changes in sensor sensitivity and offset dependence as required by claim 1. Therefore, claim 1 is believed allowable as amended.

Claims 2 and 3 incorporate claim 1 by reference and specify the alternative constructions of FIGs. 1 and 2 of applicant.

Claim 4 apparently has been misinterpreted by the examiner. Claim 4, which also incorporates claim 1 by reference, specifies that the "distance change is substantially zero," not that the distance changes to zero. A zero fiber tip to diaphragm distance would be highly detrimental to the polished undersurface of a diaphragm and transfer the heat of the relatively hot diaphragm directly by conduction to the fiber tip. Claims 2-4 are therefore believed allowable.

Respectfully submitted,

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By 

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(J.D.\Wlodarczyk - Resp to Action 09-12-02.wpd)

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Specification:

At the end of line 33 on page 2, insert "fiber tip 26 and".

In the Claims:

1. (Amended) A fiber-optic diaphragm sensor comprising a diaphragm, a housing affixed to the diaphragm, a ferrule bonded to the housing with a bonding compound and an optical fiber within the ferrule, the optical fiber having a tip spaced from the diaphragm,

the improvement comprising a selection of fiber material, diaphragm material, housing material, ferrule material and bonding compound material having at least some differing thermal expansion coefficients thereamong the materials whereby the optical fiber tip to diaphragm distance changes to compensate for any temperature change induced changes in sensor sensitivity and offset dependence.